REMARKS

Claims 2, 3, and 16 are canceled and new claims 21-22 are added. Thus claims 1, 4-15, and 17-22 are in the case.

The amendments to the claims as indicated herein do not add any new matter to this application. Applicants note that claim 1 now recites the features of previous claim 3. The last feature of claim 1 and claim 2 would have been redundant and therefore claim 2 is canceled. Claim 5 now recites "... and tracking the fixation point of each eye with a motion sensor to sense motion of a region of an object in the stereo image." Claim 15 has been conformed to amended claim 1. Support for the amendments can be found on page 8 line 15 to the end of the description as filed.

New claims 21-22 are supported at least on page 10 lines 15 to 18. Use of the gaze angle is disclosed on page 4 line 9, and page 9 lines 24-25.

Claim 16 would have been redundant and is canceled.

I. ISSUES NOT RELATING TO PRIOR ART

A. STATUTORY SUBJECT MATTER

Claims 5 and 6 stand rejected under 35 U.S.C. 101 as allegedly directed to non-statutory subject matter. The rejection is respectfully traversed.

Since the mailing date of the Office Action, the USPTO has established examining guidelines for section 101 issues, as announced in a press release on August 27, 2009. See http://www.uspto.gov/web/offices/com/speeches/20090827_interim_el.htm. Under the guidelines, a process claim is eligible for further examination if the process is tied to a particular machine, and the machine imposes a meaningful limit on the claim and more than insignificant extra-solution activity. As an example, a process that recites a step using a microprocessor, and the step that is "central to the method invented by the applicant," is eligible. See A. Hirschfeld, Interim Examination Instructions for Evaluating Subject Matter Eligibility under 35 USC 101, Process example: claim 5—Claim Tied to a Particular Machine (slide 15).

Claim 5 now recites that the process steps are performed with a motion sensor, which is a machine element when properly interpreted in light of the specification. Claim 6 recites the same feature by dependency. The claims recite that the tracking step, which is "central to the method invented by the applicant," is performed with the motion sensor. Therefore, claims 5-6 are tied to a particular machine, and the machine imposes a meaningful limit on the claim and more than insignificant extra-solution activity. The claims are eligible under section 101.

Reconsideration is respectfully requested.

B. CLAIMS 5-6—SECTION 112 ISSUE

Claims 5-6 stand rejected under 35 U.S.C. 112 as allegedly "incomplete for omitting essential structural cooperative relationships of elements," based on MPEP 2172.01. The rejection is respectfully traversed.

Applicants believe that the present amendments to claims 5-6 obviate the issue, as the claims recite the use of a motion sensor to perform certain process steps.

In the alternative, the rejection is not properly applied to the present case, or the Office should not assert this type of rejection at all. The Office appears to contend that the description only discloses the use of particular hardware to accomplish the claimed method steps, and that hardware is not recited in the method claims. The case decisions cited at MPEP 2172.01 **all generally involved situations in which the specification explicitly stated that certain hardware elements were required**. Applicants' specification has no corresponding limitations.

Further, claims 5-6 form part of the **original disclosure**, and are therefore self-supporting and enabling for purposes of section 112. Paragraph 4 of the Office Action quotes the statutory section pertaining to indefiniteness, while the rationale stated in paragraph 5 appears to be based on lack of enablement, and is unsupported in the quoted section of the MPEP. Original claims are necessarily enabled simply by their presence in the original disclosure.

Moreover, it is not possible for original claims not to state what the applicant considers to be the invention. It is manifestly improper for the Office—even in the guise of following

judicial decisions—to require the applicant to rewrite the claims according to the Office's preference rather than based on the original disclosure. Traditionally, it has been the responsibility of inventors to tell the world what the invention is by claims within a patent application. Applicants can amend claims during prosecution, but the law provides no basis for the government to amend the claims. Nevertheless, the "omitted essential element" cases deviate from the norm because the government tells the inventor that invention is something other than what the inventor claimed it to be in the patent claims. Or, put another way, even though the invention that is identified in the claim is invented by the inventor and is otherwise patentable, the courts will not allow the inventor to claim it as the invention. In particular, in each of these cases a court concludes that something that was excluded from a claim should have been included in the claim.

However, the cases do not formulate a coherent rule that can be applied in the present case. Under the cases, it is entirely unclear what "essential" means. Does it mean literally essential, so that it would be technically impossible to implement the limitations that are in the claim without also implementing the omitted limitation? Does it mean that the inventor believed that it would be technically impossible to implement the limitations that are in the claim without also implementing the omitted limitation? Does it mean that the inventor had not necessarily concluded that the omitted element was literally essential, but the inventor had never imagined any embodiment that would not include the omitted element? Does it mean that the element is the only alternative mentioned? When, and in whose mind, does the omitted element need to be essential? What would someone skilled in the art at the time of filing think was essential to the invention based on the specification? What do people skilled in the art now think is essential to the invention? What did the inventor think was essential to the invention at the time the application was filed? What did the inventor think was essential to the invention at the time the claim was added? Because of the number and complexity of these questions, the Office has been unable to formulate a coherent rule based on these cases. In the present case, the Office has

introduced no evidence to address any of these issues. Therefore, the doctrine should not be applied at all.

Reconsideration is respectfully requested.

II. ISSUES RELATING TO PRIOR ART

No novelty rejections are raised and applicants appreciate the implicit indication that at least the independent claims are considered novel over the cited prior art.

Claims 1, 2, and 8 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Borst et al. Claims 3-5, 7, 9, 10, 12, 13, 15, 16 and 18-20 stand rejected over Borst in view of Guyton et al. Claims 6, 11, 14 and 17 stand rejected over Borst and Guyton in view of Jones et al. The rejections are respectfully traversed.

The claimed invention is distinguishable from Borst in that the motion sensor tracks a visual fixation point of a user to sense the motion of the object. By contrast Borst uses an analysis of the binocular view of the tissue to be operated on, based on either landmark features in the tissue or markers placed on the tissue. Thus, Borst **pre-determines** the region of the object for which the motion is tracked.

Borst relies on either fixed landmarks or placed markers, both of which limit the locations at which tracking, and hence motion compensation, can be carried out. By contrast, using the fixation point of the user's eye as a reference for tracking, the claimed invention can compensate for motion of the object anywhere in the visual field. This results in a robotic manipulator with more flexible motion compensation. Moreover, since there is no need for preparatory work such as the identification of landmarks or the placement of markers, using the motion compensation is easier and more efficient with the claimed invention. Accordingly, the claimed invention provides a more flexible and efficient motion compensation, which is also easier to use.

Borst does not consider the user's fixation point at all. The aim of Borst is to compensate for the motion of the object within the strictly defined limits of the beacons (markers on the

image), and provide a virtually static image to the user. There is nothing to suggest using a determined fixation point to sense motion in the object being looked at, nor to move the region to which motion compensation is being applied in line with where the user is looking.

For at least these reasons, claim 1 is patentable over Borst.

In relation to the other independent claims, Guyton fails to cure the deficiencies of Borst identified above with respect to claim 1. Like Borst, Guyton does not suggest or hint at using a determined fixation point to sense motion in the object being looked at. Guyton suggests assessing the direction of fixation of an eye by various techniques. However, Guyton only discloses that control based on the fixation of a user's eye would affect the positioning of a camera, or surgical instrument, and does not suggest that the fixation point of a user's eye be used **to sense motion** in the object of interest.

A combination of Borst and Guyton would provide, at most, a system using landmarks or markers for motion tracking and fixation points for directing the camera. This is not what is claimed.

Indeed, Borst specifically discloses on page 22, lines 13-16, that the target area upon which the virtual image arrest will take place, together with the beacons (markers on the image), **must never disappear** from the original video image during the cardiac cycle and respiratory cycle. If the camera is moved as suggested in Guyton, there is a risk that the landmarks will move off image, which would stop Borst from providing a virtually static image together with motion compensation of the surgical instrument.

More particularly, **the cameras must be static for the system of Borst to correctly function**, and indeed Borst does not allow camera movement except by a definite action of the user before any procedure begins. Borst, page 17 lines 29-34. Even if the fixation point of the user in Borst was determined, if this point were too close to the edge of the image, or the camera was moved based on this fixation point, it would violate the requirement stated above that the beacons must never move off the image.

For example, if the fixation point was too close to the edge of the image, the beacons would move off image based on a region surrounding the new fixation point. If the camera moved in line with the fixation point of the user, the original beacons would move off image. Either way, this would therefore inhibit both the virtual static image being presented to the user, and would also prevent the motion compensation of Borst from functioning correctly. Therefore, a combination of Borst with Guyton **would not have been considered by a skilled person** and must be considered as **inoperative**.

Jones is similarly unrelated to the claimed invention. Jones is in the technical field of volumetric data display whereas Borst is in the field of surgical robots, and is directed toward motion compensation in robotic manipulators. A skilled person, seeking to improve motion compensation as described above, would have no reason to consult a document in the field of data display. Jones is **non-analogous art** and should be removed as a reference because a skilled person would not have combined Jones with Borst. The Office has adduced no sufficient evidence or rationale why Jones would have been combined. As the Supreme Court recently stated, "[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some **articulated reasoning** with some **rational underpinning** to support the legal conclusion of obviousness." *KSR*, quoting *In re Kahn*, 441 F.3d at 988. The "rational underpinning" requires **evidence** and there is no evidence presently of record to support a combination of Jones with Borst.

Even if a skilled person did consult Jones, all he or she would learn is that gaze tracking can be used to select a volume of interest. A combination of Jones with Borst would provide, at most, modifying the motion compensation to be limited to a certain volume based on gaze tracking. However, nothing in Jones suggests replacing the tracking of landmarks or markers **on the tissue** in the binocular views of Borst with the tracking of a fixation point to sense tissue movement. The combination of Borst and Jones would still fall short of the claimed invention and would not provide the benefits of the claimed invention identified above.

Borst even teaches away from a combination with Guyton or Jones. Borst states that several other users may be looking at the same image through operating spectacles (e.g., Borst FIG. 1, page 19 lines 3-6). A system where the fixation point of one user affected the view of other, unrelated users would be exceedingly annoying and possibly even nauseating for every other users than the one who was controlling the movement of the fixation point or camera. For at least this reason, a skilled person would not have combined Borst with Guyton or Jones.

Fundamentally, the cited art of record, even when considering tracking a fixation point, consistently fails to disclose or suggest the claimed step of using fixation point tracking to infer motion. Guyton uses the fixation point for directing a camera or surgical instrument, and Jones uses it to select a plane of visualization. There is no support in the record for a link between tracking a fixation point and motion compensation; the combination as claimed only arises from the applicants' contribution and cannot be derived from the cited references.

Each of the independent claims includes the features identified above that are missing from the cited references, and each of the dependent claims includes such features through dependency.

For all these reasons, the claims are allowable over the art of record. Reconsideration is respectfully requested.

III. CONCLUSIONS & MISCELLANEOUS

For the reasons set forth above, all of the pending claims are now in condition for allowance. The Examiner is respectfully requested to contact the undersigned by telephone relating to any issue that would advance examination of the present application.

A petition for extension of time for two (2) months and otherwise to the extent necessary to make this reply timely filed, is hereby made. If applicable, a check for the petition for extension of time fee and other applicable fees is enclosed herewith. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby

authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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